

REMARKS

Reconsideration of presently solicited Claims 1, 8 and 9 (organic electrolytic solution) and 10 to 12 and 19 to 21 (lithium sulfur battery) respectfully is requested. For the reasons indicated hereafter, these claims are urged to be in condition for allowance.

Claims 1 and 19 have been amended. Claim 1 has been amended to incorporate the recitations of claims 4 and 5. Claims 4 and 5 have been canceled. Claim 19 has been amended to depend from claim 1, as opposed to canceled claim 4. Entry of the amendments is respectfully requested.

As described in detail in the Specification, Applicants have provided an improved organic electrolytic solution for use in a lithium sulfur battery and a lithium sulfur battery that incorporates the same. Improved operating stability and improved electrical conductivity are provided.

Claims 1, 8-12 and 19-21 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Mikhaylik (WO 00/36683). Applicants respectfully traverse this rejection.

It is well established law that patentability is negated under 35 U.S.C. §102 only when the prior disclosure is identical to the invention sought to be patented. Each and every element of the claimed invention must be disclosed in a single reference in complete detail.

Here, the presently claimed invention recites an organic electrolytic solution for a lithium sulfur battery, comprising a lithium salt and an organic solvent. The organic solvent contains a compound of the formula (2) and an isomer thereof, a polyglyme, and a dioxolane. Thus, the presently claimed invention incorporates a ternary solvent mixture. The Examiner has suggested that this ternary mixture is taught by Mikhaylik. However, after a careful review of Mikhaylik, applicants assert that Mikhaylik does not teach or suggest the presently claimed ternary mixture of an ether (compound of formula (2)), polyether (polyglyme) and a cyclic ether (dioxolane).

Mikhaylik, from page 12, line 3, to page 15, line 3, discusses solvents. The teachings to solvent mixtures are primarily binary mixtures. See for example page 12, lines 9-11 ("A solvent may comprise ... a mixture of chemical compounds (e.g., ethyl alcohol and ethyl acetate)."), page 15 lines 2-3 ("The volume ratio of the two

solvents in the preferred binary mixtures may vary from about 5 to 95 to 95 to 5.") and Examples 1-7 and 9.

Mikhaylik does not teach or suggest a mixture of an ether, polyether and a cyclic ether. And, accordingly, Mikhaylik does not teach or suggest the presently claimed organic solvent. Accordingly, the assertion that Mikhaylik anticipates the presently claimed invention must be withdrawn.

Moreover, the presently claimed invention recites a ternary mixture, each of which is an essential component of the organic solvent. If the claimed organic electrolytic solution is used for forming a lithium battery, the organic electrolytic solution lowers the reactivity of lithium metal and stabilizes the lithium metal. The organic electrolytic solution also improves the ionic conductivity of lithium and improves the performance of lithium batteries. The claimed solvent of the organic electrolytic solution contributes to an improvement in the charging/discharging cycle and the discharging capacity of lithium sulfur batteries compared to the conventional electrolytic solution of, e.g., Mikhaylik.

The withdrawal of the rejection is urged to be in order and is respectfully is requested.

If there is any remaining point that requires clarification prior to the allowance of the Application, the Examiner is urged to telephone the undersigned attorney so that the matter can be discussed and promptly resolved.

Respectfully submitted,

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